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the author, Washington, D. C., 1912). If it should seem impracticable to name all colors, a numerical system could be devised. The writer has felt the need of some such set of color standards in the Soil Survey work in South Dakota. Perhaps others may have felt the same need.

J. G. HUTTON

S. D. EXPERIMENT STATION

SCIENTIFIC BOOKS

The Letters of William James. Edited by his son, HENRY JAMES. Two volumes, xx + 348 and xiii + 382, The Atlantic Monthly Press, Boston, 1920. \$10.00.

William James was one of the half dozen greatest Americans of his generation; he was also a past master of writing. Every one with intellectual interests will wish to read his letters. They will be well rewarded, whether they seek better acquaintance with a great man, or literature itself, or stimuli to reflections upon the conditions of scholarly and scientific work in America.

The most notable fact about James himself which the letters reveal and emphasize is that he was from youth a philosopher and moralist, tremendously interested in the world as a whole and in its deeper meanings. Painting, natural history and medicine, each for a brief time, and psychology for almost a score of years, restrained him from the study of fundamental questions and sweeping statements which really had his life-long allegiance. At the age of twenty-six, while studying medicine and expecting to earn his living by practising it, and while gaining considerable acquaintance with the best work of the time in physiology and psychology, he was reading Hegel and writing that Kant's "Kritik" "strikes me so far as almost the sturdiest and honestest piece of work I ever saw." In the partial list of his readings during the half year after he took his M.D. philosophy and religion outweighed science and medicine nearly ten to one.

In respect to the actual working of James's

intellect, the letters probably do not add much to what the shrewd reader would infer from the "Principles of Psychology," the "Varieties of Religious Experience," "Pragmatism" and other writings. The letters show brilliantly the extreme fertility of mind, the receptivity to facts, theories and viewpoints of all sorts, the impulsive reaction to approve and make the best out of every man's offering, the intuitive sense of causes and consequences, and the perfect candor and directness. They do not show so well the sheer mastery in observing and organizing the facts of human nature and behavior, the final recognitions of truth and value, and the persistent refusal to tolerate inadequacies or imperfections by which James worked his way to them.

As literature the letters have the verve, the magic gift of epithet and the utter sincerity which, writing or speaking, James never lacked. His caricature, or possibly characterization, of the university professor will be often quoted:

—a being whose duty is to know everything, and have his own opinion about everything, connected with his *Fach*. . . has the most prodigious faculty of appropriating and preserving knowledge, and as for opinions, he takes *au grand sérieux* his duties there. He says of each possible subject, "Here I must have an opinion. Let's see! What shall it be? How many possible opinions are there? three? four? Yes! just four! Shall I take one of these? It will seem more original to take a higher position, a sort of *Vermittelungsansicht* between them all. That I will do, etc., etc." So he acquires a complete assortment of opinions of his own; and, as his memory is so good, he seldom forgets which they are! But this is not reprehensible; it is admirable—from the professorial point of view.

He tells his little daughter of a big mastiff:

The ears and face are black, his eyes are yellow, his paws are magnificent, his tail keeps wagging *all* the time, and he makes on me the impression of an angel hid in a cloud. He longs to do good.

Of the subtleties in the theme and treatment of his brother's latest novels he writes:

You know how opposed your whole "third manner" of execution is to the literary ideals which

animate my crude and Orson-like breast, mine being to say a thing in one sentence as straight and explicit as it can be made, and then to drop it forever; yours being to avoid naming it straight, but by dint of breathing and sighing all round and round it, to arouse in the reader who may have had a similar perception already (Heaven help him if he hasn't!) the illusion of a solid object, made (like the "ghost" at the Polytechnic) wholly out of impalpable materials, air, and the prismatic interferences of light, ingeniously focused by mirrors upon empty space. But you *do* it, that's the queeriness! And the complication of innuendo and associative reference on the enormous scale to which you give way to it does so *build out* the matter for the reader that the result is to solidify, by the mere bulk of the process, the like perception from which *he* has to start. As air, by dint of its volume, will weigh like a corporeal body; so his own poor little initial perception, swathed in this gigantic envelopment of suggestive atmosphere, grows like a germ into something vastly bigger and more substantial.

To this Henry James replied with unparalleled conciseness,

You shall have, after a little more patience, a reply to your so rich and luminous reflections on my book—a reply almost as interesting as, and far more illuminating than, your letter itself.

Of a night in the Adirondacks he writes:

I was in a wakeful mood before starting, having been awake since three, and I may have slept a little during this night; but I was not aware of sleeping at all. My companions, except Waldo Adler, were all motionless. The guide had got a magnificent provision of firewood, the sky swept itself clear of every trace of cloud or vapor, the wind entirely ceased, so that the fire-smoke rose straight up to heaven. The temperature was perfect either inside or outside the cabin, the moon rose and hung above the scene before midnight, leaving only a few of the larger stars visible, and I got into a state of spiritual alertness of the most vital description. The influences of Nature, the wholesomeness of the people round me, especially the good Pauline, the thought of you and the children, dear Harry on the wave, the problem of the Edinburgh lectures, all fermented within me till it became a regular Walpurgis Nacht. I spent a good deal of it in the woods, where the streaming moonlight lit up things in a

magical checkered play, and it seemed as if the Gods of all the nature-mythologies were holding an indescribable meeting in my breast with the moral Gods of the inner life. . . . The intense significance of some sort, of the whole scene, if one could only *tell* the significance; the intense inhuman remoteness of its inner life, and yet the intense *appeal* of it; its everlasting freshness and its immemorial antiquity and decay; its utter Americanism, and every sort of patriotic suggestiveness, and you, and my relation to you part and parcel of it all, and beaten up with it, so that memory and sensation all whirled inexplicably together; it was indeed worth coming for, and worth repeating year by year, if repetition could only procure what in its nature I suppose must be all unplanned for and unexpected. It was one of the happiest lonesome nights of my existence, and I understand now what a poet is.

It would be unwise, within the limits of this review, to discuss the "Letters" as evidence concerning the forces which determine intellectual production and moral zeal in men of science. The readers of this journal will also prefer to draw their own conclusions. I note only a few matters which might not attract attention.

James writes apologetically of having the sole copy of the "Principles" insured for \$1,000 in transit! In 1896, being then fifty-four, under the spell of Chicago,

I tried a stenographer and typewriter with an alleviation that seemed almost miraculous. I think I shall have to go in for one some hours a week at Cambridge. It just goes "whiff" and six or eight long letters are *done*.

Apparently he had spent seven years in Europe before ever going west of the Adirondacks; and seems not to have visited Yale or Princeton or Johns Hopkins or Columbia until he was fifty.

James's output seems to have been influenced greatly by outside pressure. Except for the enterprise of a publisher and the existence of the lecture foundations of Gifford, Lowell and the Columbia Department of Psychology, we might well have gone without the "Principles," "Varieties," and "Pragmatism," though we might, of course, have had something better. In the

prime of his life, when his ability was entirely obvious, James taught logic to beginners, extra courses in Radcliffe, and courses in summer schools!

EDWARD L. THORNDIKE

SPECIAL ARTICLES

NON-DISJUNCTION OF THE FOURTH CHROMOSOME OF *DROSOPHILA*

IN *Drosophila melanogaster* the gene for "eyeless" (e) and its normal allelomorph (E) are situated in the small fourth chromosome. Normal eye is dominant.

When heterozygous Ee normal flies are crossed with eyeless ee, a ratio of 1:1 is expected. Actually this ratio is approached, although the greater viability of the normal type modifies the ratio to approximately 1.3:1.

In a single mating of this sort a count of 171 normal to 206 eyeless was obtained. Breeding tests of the descendants of this mating indicate that in all probability non-disjunction of the fourth chromosome has taken place.

If an Ee fly formed non-disjunctive gametes Ee and—, the cross with an ee individual would give rise to Eee flies. Here two doses of "eyeless" meet one of "normal" eye. The opportunity is given for an upset in the balance of dominance between E and e. The excess of eyeless flies, mentioned above, suggests that such an upset has taken place. Further matings make it appear that the Eee form may be *either* normal or eyeless in appearance, certain individuals being extremely difficult to classify.

In the course of the breeding work several interesting results were obtained. Among these was the isolation of *eyeless* flies, theoretically of the formula Eee, which when crossed *inter se* or with other eyeless ee, gave *normal eyed* progeny in considerable numbers. Ratios of 8, 9, 10 or even 12 normals to 1 eyeless were also produced from matings presumably Eee × Ee. Both these conditions were expected on the hypothesis of non-disjunction.

Using the appearance of eyeless flies as a test, it seems that the mitosis of the Eee flies

is in the vast majority of cases, if not always, Ee and e; while similarly that of the Eee flies is Ee and E.

The variation in somatic appearance of the Eee form and the selective type of mitosis, referred to above, make it difficult to demonstrate genetically the presence of Eee individuals. If flies of this type have occurred their mitosis is commonly Ee and Ee. One mating only indicates a possible exception to this type of mitosis. This mating shows a peculiar ratio possibly due to the presence of eee eyeless forms.

A further detailed report of the work will shortly be published. I am greatly indebted to Dr. E. G. Anderson for helpful suggestions and discussion and to the Misses E. E. Jones and D. M. Newman for assistance in the laboratory.

C. C. LITTLE

COLD SPRING HARBOR, N. Y.,
January 6, 1921

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

REPORT OF THE TREASURER FOR 1920

IN conformity with Article 2, Section 6, of the By-Laws and by direction of the Council, the Treasurer has the honor to submit the following report for the period December 20, 1919, to December 23, 1920.

The total cash receipts during the period in question is \$13,096.05. These include \$4,381.21 from the W. Hudson Stephens estate; \$1,850 from 32 Life Membership commutations, and \$5,707.75 from interest on securities of the association.

The total disbursements made during the period in question amount to \$10,272.56. These include an aggregate of \$4,500 for 19 grants authorized by the council, and \$4,431.31 paid for \$4,500 face value Victory Loan 4½% bonds.

The total amount of funds of the association consisting of cost value of securities purchased, appraised value of securities received from the Colburn Estate, and cash in banks, is \$125,723.59.

A balance sheet, showing assets and liabilities, and tables showing details of receipts and disbursements, are appended hereto.

(Signed) ROBERT S. WOODWARD,
Treasurer

Dated December 23, 1920